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The manual offers a source of variables of potential use as behavioral criteria in an evaluation program. Twenty-nine individual difference variables are included, and for each, a brief definition is provided. The measures used to assess the variables are described, and evaluation of the variables and pertinent references are listed. (Author)

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CENTER FOR THE
STUDY OF
EVALUATION

UCLA
Graduate School
of Education
Los Angeles, California

MANUAL OF INDIVIDUAL DIFFERENCE VARIABLES AND MEASURES

Norma D. Feshbach

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CSE Special Report No. 2
December 1968

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MANUAL OF INDIVIDUAL DIFFERENCE VARIABLES AND MEASURES

Norma D. Feshbach

A preliminary guide to the selection of personality and motivational variables and measures relevant to the evaluation of educational programs and systems.

CSE Special Report No. 2
December 1968

Center for the Study of Evaluation
UCLA Graduate School of Education
Los Angeles, California

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INTRODUCTION
AND GUIDE FOR THE USE
OF THE MANUAL

The approach of the Research and Development Center of the University of California at Los Angeles toward the evaluation of instructional programs is characterized by a theoretical model which views evaluation in multi-factorial terms. It has become increasingly evident that a particular educational outcome depends on the method and measures used in evaluation, parameters of the instructional program, individual and group characteristics of the students and teachers involved in the program, and ecological factors relating to the atmosphere of the school and the community. The present manual focuses on one class of these factors--individual difference variables characterizing the child.

Functions of Individual Difference Variables

Individual difference variables enter into the process of evaluation in two major ways. First, individual difference variables may be significant determinants of the degree of effectiveness of educational procedures. Second, many of these same variables may be viewed as educational objectives or consequences of educational experiences.

Individual Control Functions: With respect to the control function, instructional efforts are inevitably directed toward individuals who differ on many

dimensions, such as age, sex, race, social class, intelligence, achievement, aspiration level, cognitive approach, differential responsiveness to incentives, anxiety, and dependency, all of which may significantly influence the cognitive and affective consequences of a particular educational program.

To adequately evaluate an educational treatment, it is necessary to take into account the relevant individual difference variables which interact with the treatment. While some treatments may produce uniform change, the more typical finding in educational research is marked variability in treatment outcomes. A significant source of this variability may be the degree of congruence between the treatment and the particular individual context variables. It is obvious that the evaluation of any treatment should specify the student characteristics which determine the effectiveness of a treatment. Less obvious is the apriori determination of those individual characteristics which should be incorporated in the evaluation. The list of variables detailed in this manual offers a preliminary guide to the selection of potentially relevant individual difference variables.

The inclusion of individual difference variables in evaluation is not intended simply to reduce variance and thereby increase the precision of the research design, though an increase in precision is certainly a worth while function. Even more significant, however, is that these individual parameters may be critical factors in producing the educational outcomes or

effects. Individual difference variables may provide essential insights into the processes mediating change and may even determine whether or not significant changes are obtained. For example, a reading program with a heavy emphasis on phonics may be highly effective with children whose cognitive style is characterized as "analytic" and ineffective for children characterized as "impulsive." A reading program emphasizing a modified "Look and See Method" may have directly opposite effects, with the "impulsive" rather than the "analytic" child responding optimally to this method. Consequently, if an evaluation of reading programs failed to consider individual differences in cognitive styles, the evaluator might conclude that the outcomes of the two reading methods were essentially equivalent. Thus, unless an evaluation takes relevant individual difference variables into account, fundamental differences between the effects of varied educational methods may be obscured.

Having acknowledged the importance of individual difference variables, the evaluator still is faced with the problem of indentifying the relevant variables from the many dimensions on which individuals vary. There is no ready solution to this problem. Ultimately the choice of variables should be determined by a conceptual schema which offers a theoretical basis for the interaction between student attributes and dimensions of instructional procedures. The proposed schema, hopefully, will be an outgrowth of empirical findings of principles of growth and development and of motivational, social, and learning

theories. On the basis of objectives, content, and procedures of a specific evaluation program, this schema should enable the prediction of those student characteristics that should be included as control variables. When a particular evaluation project is undertaken, it is uneconomical and impractical to assess all student characteristics. A selection of those behavioral dimensions most intrinsically related to the processes involved in an instructional program and most likely to covary with aspects of teachers' behavior and personality should be derivable from this conceptual schema.

In the absence of this theoretical ordering, the evaluator must rely on available knowledge, current theory, and intuitive notions in selecting which variables to include in a given evaluation. It is necessary to control certain attributes, such as sex, IQ, and previous achievement in most evaluation studies. Other parameters, such as self-esteem, anxiety, cognitive style, imitative tendencies, etc., are only relevant to certain kinds of instructional or administrative programs. Having identified which variables to assess, the evaluator's final choice is dependent on measurement considerations and on feasibility and cost factors. A pervasive problem in this phase of the evaluation process is the lack of adequate measuring instruments. One purpose of this manual is to provide the evaluator with some readily available material which may be useful in resolving these issues.

Dependent or Criterion Function: Many of the same problems entailed in the identification and measurement of individual control variables are also encountered when these dimensions are used as dependent or criterion variables. However, the set of student attributes that are control variables is not equivalent to the set that is dependent or criterion variables. Thus, it may be desirable to use conformity or suggestibility as control variables even though significant changes in neither would be expected as a consequence of some educational program; e.g., in evaluating the effects of video tape versus programmed instruction of social studies materials, it might be anticipated that the media presentation would be relatively more effective with the highly suggestible child while programmed instruction might be more effective with the child low in suggestibility. However, since neither instructional procedure would be expected to affect the child's suggestibility or conformity, these variables would not be used as criteria in the evaluation.

A critical issue in evaluating educational programs or systems is specifying exactly which behaviors should be assessed. One of the major current dissatisfactions with traditional approaches to evaluation has been the reliance on academic and achievement test scores as the basis for the evaluation. However, while it is generally agreed that a more complex view of educational effects upon the child must be articulated, it is still not clear what aspects of the child's behavior should be selected for appraisal. For example, at the present time there are no sets of rules which

specify what behaviors to examine when evaluating different types of programs such as reading, new math, team teaching, or programmed instruction. The development of a classification of programs and systems would facilitate the classification of behavioral effects.

These behavioral effects may be direct or indirect, specified or unspecified, desirable or undesirable. One possible way of ordering these effects is in terms of their proximal or distal relationships to immediate educational objectives. The most proximal effects would be changes in academic achievement, while less proximal effects would be changes in such behavior as cognitive style and creativity; distal effects would encompass changes in attitudes toward school, level of aspiration, self-concept, tolerance for ambiguity, etc. This procedure for ordering effects could be applied to a range of educational evaluation problems.

It is hoped that the present manual may serve as a source of suggestions concerning variables that might be useful as behavioral criteria in an evaluation program.

Purpose

In the course of the initial activities of the CSEIP, the need for a manual specifying relevant individual difference variables, including measuring instruments and literature reference, became apparent.

This preliminary manual was developed to help meet this need and, in addition, to eventually serve as a more general reference.

The final selection of variables was guided by theoretical considerations, particularly pertaining to social and developmental processes. In addition, the selection was influenced by the heuristic value of the variable and its relevance to educational problems and objectives. The variables described in the manual do not exhaust individual difference dimensions that may be relevant to educational evaluation. However, it is likely that the variables included will meet the requirements of most evaluation situations. As has been previously noted, the inclusion of any of these variables in a particular evaluation project as control or criterion variables depends upon the functional relevance of the dimension to the specific evaluation problem as well as pragmatic considerations.

In addition to enumerating potentially relevant variables, several measures of the variable with pertinent references have been supplied. Although every effort was made to select the most valid and reliable measure available, many of the instruments listed do not meet rigorous measurement requirements. Despite this limitation however, it was thought best to cite some operational specification of the variable.

It is hoped that the manual will be used in the spirit in which it was developed: as a preliminary

guide to evaluators who wish to explore and broaden the range of relevant variables assessed in educational evaluation.

Organization of the Manual

Twenty-nine individual difference variables have been included in this manual. These are: aggression, anxiety, attitudes toward school, cheating or deception, conformity, constricted versus flexible control, curiosity, delay of gratification, dogmatism, dominance-submission, empathy, expectation of success, field articulation, imitation, impulsivity versus reflection, independence-dependence, internal versus external control of reinforcement, intolerance of ambiguity, introversion-extroversion, leveling-sharpening, masculinity-femininity, moral judgment, need achievement, need affiliation, popularity, risk taking, self concept, social desirability, and suggestibility. Each variable in the manual is defined, the measures used to assess the variable are described, evaluations of the variable when available are given and pertinent references are listed.

Definitions: For each variable a brief, nontechnical definition is given. These definitions have been primarily derived from social science dictionaries and from the recent literature.

Measures: The tests and measures for each variable have been classified as either "Recommended Measures" or "Other Measures". Those measures which appear

to provide the most accurate or reliable index of the variable in question are included in the "recommended" category.

The criteria for placing an instrument in the "recommended" category varied with the range of instruments available to assess the particular variable in question. Thus, the "recommended" measures vary in degree of validity and reliability.

For each test or measure included under a variable, there is a short description followed by information about the reliability and validity of the measure ("Measure Evaluation") and a reference.

1. Description. The brief description of each measure is intended to indicate the type of test, e.g., behavioral rating, paper and pencil, etc.; the type of items in the test, e.g., self-evaluation, knowledge, perception, etc.; and the length of the test or number of items. Methods of administration and scoring have also been included where appropriate.

2. Measure Evaluation. For most of the tests and measures, some estimate of reliability or validity has been provided. Statistical information, such as split-half, test-retest or interrater reliabilities, is noted when they have been reported in the references. When the measure has been compared with other tests of the same variable, the correlations

are also presented. The sample size and type of subjects used in the evaluation of the measure are also given, both to show the extent of the evaluative studies and to provide some indication of the usefulness of the test.

3. Reference. For each test or measure, a reference is provided which pertains to a study in which the measure was either used or described. Typically, the description and the data on the evaluation of the measure were taken from the cited reference.

AGGRESSION

Definition

An act, the goal of which is injury to another person or object. Aggression can be either instrumental or hostile and pro-social or anti-social.

RECOMMENDED MEASURES

1. Doll Play Technique

Description: Young children engaged in 10-20 minute play sessions using standardized materials including a doll house containing movable furniture and a five-member doll family. Aggressive behavior was recorded by the experimenter on the basis of 15 second time sampling of discrete responses. The measure of aggression consisted of the frequency of aggressive acts and the proportion of aggressive to total acts in the session. Aggressive acts were defined as any hostile action either verbal or physical.

Measure Evaluation: Interrater reliability exceeding 85% agreement is reported.

Reference: Sears, P. Doll play aggression in normal young children: Influence of sex, age, sibling status, father's absence. Psychological Monograph, 1951, 65 (Whole No. 323).

2. Projective Play

Description: Observation of aggressive responses were recorded and classified into predetermined categories by dividing free play sessions into discrete time sampled units. Verbal, gestural, and physical responses were rated on a scale for frequency, intensity, direction, and object of aggression. The aggression consisted of the total number of aggressive responses and a measure of intensity.

Reference: Siegel, A. E. Aggressive behavior of young children in the absence of an adult. Child Development, 1957, 28, 371-378.

3. Thematic Apperception Test (TAT)

Description: Subjects were given 10 TAT cards, and responses were scored for aggressive acts in the stories. Aggression was defined as any act or thought of the central figure of the TAT story which implicitly or explicitly had as its goal response either physical or verbal injury to an organism.

Measure Evaluation: Fantasy aggression was found to be significantly related to behavioral aggression in groups of delinquent and non-delinquent preadolescent boys.

Reference: Mussen, P. H., & Naylor, H. K. The relationship between overt and fantasy aggression. Journal of Abnormal and Social Psychology, 1954, 49, 235-240.

OTHER MEASURE

Modeling and Aggression

Description: In a variety of situations (e.g., film, real life model) a model displays certain aggressive acts toward a person or object. Observers record the amount of previous aggressive behavior and the amount which occurs after watching an aggressive or nonaggressive model.

Reference: Bandura, A., & Walters, R. H. Social learning and personality development. New York: Holt, Rinehart & Winston, 1965.

ANXIETY

Definition

A secondary drive for which the establishing operation is the acquisition of a specific avoidance response, and the symptom of which is that the stimulation of the anxiety depresses the rate of the responses usual in the situation and produces other behaviors inappropriate to the situation. A distinction is made between facilitating and debilitating anxiety; the former is conducive to improve performance whereas the latter interferes with performance. Operationally there are two general types of anxiety measures: tests of general anxiety and tests of specific (or test) anxiety.

RECOMMENDED MEASURES

1. General Anxiety Scale (G.A.S.C.)

Description: This scale includes 34 anxiety items plus 11 lie-scale items which require "yes-no" answers, e.g., "Do you get scared when you have to walk home alone at night?" For use with elementary school age children.

Measure Evaluation: Negatively correlated with measures of need achievement and IQ.

Reference: Sarason, S. B., Davidson, K. S., Lightfall, F. F., & Waite, R. R. Classroom observations of high and low anxious children. Child Development, 1958, 29, 287-295.

2. The Test Anxiety Scale for Children (T.A.S.C.)

Description: This test is comprised of 30 test anxiety questions, to be answered yes or no, e.g., "When you are in bed at night, do you sometimes worry about how you are going to do in class the next day?" For use with elementary school age children.

Reference: Sarason, S. B., Davidson, K. S., Lightfall, F. F., & Waite, R. R. A test anxiety scale for children. Child Development, 1958, 29, 105-113.

3. Taylor Manifest Anxiety Scale (M.A.S.)

Description: This scale has 50 items related to anxiety plus 175 buffer items, all taken from the MMPI, and a rigidity scale. Subjects are asked to state whether they believe each item is descriptive of them or not.

Reference: Taylor, J. A. A personality scale of manifest anxiety. Journal of Abnormal, and Social Psychology, 1953, 48, 285-290.

4. Test Anxiety Questionnaire (T.A.Q.)

Description: This questionnaire is a 39 item self-report scale divided into four sections: questions about individual intelligence tests, group intelligence tests, course examinations, and general questions.

Reference: Sarason, S. B., & Mandler, G. Some correlates of test anxiety. Journal of Abnormal and Social Psychology, 1952, 47, 810-817.

5. Achievement Anxiety Test

Description: This test is a two-part scale. It consists of nine facilitating anxiety items, e.g., "I work most effectively under pressure when the task is very important" (Never-Always), and ten debilitating anxiety items, e.g., "The more important the exam, the less well I seem to do" (Never-Always).

Reference: Carrier, N. A., & Jewell, D. O. Efficiency in measuring the effect of anxiety upon academic performance. Journal of Educational Psychology, 1966, 57, 23-26.

ATTITUDES TOWARD SCHOOL

Definition

A relatively enduring stabilized set or learned predisposition; to think about or to behave in certain evaluative ways toward school and school-related matters. A persistent mental and/or neural state of readiness to react toward school and/or school-related matters whereby the school experience is modified by the set or state of readiness. A state of readiness to react to school and related matters not necessarily as they are but as they are conceived to be.

RECOMMENDED MEASURES

1. Survey of Study Habits and Attitudes

Description: The test is intended to measure changes in study habits and attitudes toward study. Items were empirically keyed on the basis of items which discriminated students of high and low grade-point average. There are 36 items for men and 29 items for women.

Measure Evaluation: Split-half reliability of .92 was obtained for men. Two week test-retest reliability was .95 and on a different sample an 11-week interval yielded a test-retest reliability of .88.

Reference: Brown, W. F. & Holtzman, W. H. Survey of study habits and attitudes. New York: Psychological Corporation, 1953.

2. The Preferred Instructor Characteristics Scale (PICS)

Description: Measures student preferences for cognitively versus affectively oriented teachers. The instrument consists of 36 forced-choice paired comparisons (six affective and six cognitive items), e.g., "do you prefer an instructor who": (a) is an expert, (b) treats us as mature people; (a) makes the classroom pleasant, (b) thinks logically.

Measure Evaluation: The measure was administered to two different class sections. Thirty-four of the 36 items yielded a phi coefficient of .20 or higher in discriminating between the upper and lower 27% of the distribution. Test-retest reliability of .88 for a four week interval was obtained for a group of 21 subjects.

Reference: Krumboltz, J. D., & Farquhar, W. W. The effect of three teaching methods on achievement and motivational outcomes in a new study course. Psychological Monographs, 1957, 71, 1-26.

OTHER MEASURES

1. Math Attitude Scale

Description: Paragraphs describing attitudes toward math written by 310 college students were made into Likert-type scaled items. The scale consists of 10 negative and 10 positive items, e.g., "Mathematics makes me feel uncomfortable, restless, irritable, and impatient" or "I love mathematics, and I am happier in a math class than in any other class."

Measure Evaluation: Test-retest reliability was .94. An x^2 test of independence between attitudes toward academic subjects in general and math specifically indicated independence.

Reference: Aiken, L. R. & Dreger, R. M. The effect of attitudes on performance in mathematics. Journal of Educational Psychology, 1961, 52, 19-24.

2. Children's Attitude Toward Teachers and Their Life in School

Description: Children are individually presented with a series of pictures with the race of the subjects obscured. Subjects are to explain why something is happening or predict what will happen next. Specifically, the following situations are depicted, and children are then to respond to them.

Trouble - what children expect of teachers when they are in trouble

Happiness - what teachers do to make children feel happy

Good Behavior - concepts of praise and reward

Bad Behavior - concepts of kind of behavior which will bring punishment

Punishment - punishment expected when children aggress against the teacher; punishment expected when children fight and quarrel among themselves

Anger - what teachers do to make children feel angry

Reference: Biber, B., & Lewis, C. An experimental study of what young children expect from their teachers. Genetic Psychological Monograph, 1949, 40, 3-97.

3. Scale of Attitudes Toward Problem Solving

Description: The scale consists of 63 Likert-type items, e.g., "I would rather have someone tell me the solution to a difficult problem than to have to work it out for myself."

Measure Evaluation: Parallel form reliability was obtained by selecting 36 items that significantly differentiated high and low scorers. These items split on the basis of similarity of content yielded parallel forms reliability of from .83 to .94.

Reference: Carey, G. L. Sex differences in problem solving performance as a function of attitude differences. Journal of Abnormal and Social Psychology, 1958, 56, 256-260.

4. Projective Test of Children's Attitudes Toward School

Description: A series of 20 semi-structured sketches depicting various teacher-child interactions are presented to young children (first and second grade). Subjects are to describe what the class has done, what the teacher has done, what the teacher will do, etc. In general, they are to describe what has led up to the situation, what is happening, and what will happen next.

Measure Evaluation: Interrater agreement for four judges ranged from 60.7% to 89.3%; for three judges from 85.7% to 98.2%. Item intercorrelations for items rationally defined as representing the same construct ranged from .36 to .60.

Reference: Cohen, Sandra R. An exploratory study of young children's attitudes toward school. Proceedings, 75th Annual Convention, A. P. A., 1967, 305-306.

5. Dutton, Attitudes Toward Arithmetic Test

Description: The measure consists of a scale of statements to assess feelings about arithmetic, ranging from extremely negative to extremely positive. Suitable for use with older adolescents.

Measure Evaluation: Test-retest reliability of .94 was obtained.

Reference: Dutton, W. H. Measuring attitudes toward arithmetic. Elementary School Journal, 1954, 55, 24-31.

6. Attitudes Toward School Subjects Scale

Description: The measure is composed of items to be rated on Likert-type scales along six dimensions. The test is intended to assess the habitual orientation of students toward decision or choice situations according to two dimensions: (1) degree of deliberation involved in making a choice and (2) relative preference for social as opposed to non-social subjects.

Reference: Edwards, T. B., & Wilson, A. B. Attitudes toward the study of school subjects. Educational Theory, 1958, 8, 275-84.

7. School Subject Preferences

Description: Children in the third, fourth, and fifth grades (N = 300) listed in order of preference their favorite school subjects. Each choice was given a weighted score and then accumulated to obtain a total score.

Reference: Greenblatt, E. L. An analysis of school subject preferences of elementary school children of the middle grades. Journal of Educational Research, 1962, 55, 554-560.

8. Measurements of School Subject Preferences

Description: The instrument is intended to assess both the child's and teacher's preferences for school subjects and their attitudes. In addition, the child's perception of the teacher's preferences for school subjects and the child's perception of his own success and degree of enjoyment of school is ascertained. Questionnaire and Q-sort ratings are used.

References: Inskeep, J. & Rowland, M. An analysis of school subject preferences of elementary school children of the middle grades: Another look. Journal of Educational Research, 1965, 58, 225-228.

9. Survey of Opinions-Attitudes

Description: Quantitative measure of student attitudes toward class on a favorable-unfavorable continuum. Subjects respond on the basis of the percentage of time they feel a certain way toward the class, e.g., "I enjoy this class."

Measure Evaluation: On the first administration, arbitrary weights were assigned to each response to each question. Thus, the most favorable attitudes toward the class yields the highest total score. A new series of weights was assigned after the second administration, using the method of reciprocal averages. The weights stabilized after three administrations with a reliability of .89.

Reference: Krumboltz, J. D., & Farquhar, W. W. The effect of three teaching methods on achievement and motivational outcomes in a new study course. Psychological Monographs, 1957, 71, 1-26.

10. Lowery Attitudes Toward Science, Scientific Process, and the Scientist as an Individual

Description: The test, which was administered to fifth graders, consists of three separate parts:

1. Word Association--consists of words which refer to scientific concepts and objects;
2. Lawrence Lowery Apperception Test--consists of neutral drawings depicting a child in a situation pertaining to one of three themes: scientific process, or the scientist as an individual. Subjects are to describe what led up to the situation, what is happening, and what will happen in the future;
3. Sentence Completion--consists of words with scientific references as the stem for the sentence to be completed, e.g., "The field of science is _____."

Reference: Lowery, F. Development of an attitude measuring instrument for science education. School Science and Mathematics, 1966, 66, 494-502.

11. Factors Determining Attitudes Toward Arithmetic and Mathematics

Description: A preliminary study of previous influences which effect students' attitudes toward math using questionnaire and interview techniques. The subjects were 16 University of California at Davis freshmen.

Reference: Poffenburger, T. N., & Norton, D. A. Factors determining attitudes toward arithmetic and mathematics. Arithmetic Teacher, 1956, 3, 113-116.

12. Semantic Differential Attitudes Toward School of Freshmen

Description: Scales representative of Osgood's evaluative dimension are used to rate 15 concepts related to school activities on seven-point scales. The concepts are: athletics, books, cheating, college, easy money, good time, grades, homework, play, professors, research, social activities, studying, tests, and work. The eight adjective scales are: beautiful-ugly, clean-dirty, fair-unfair, good-bad, kind-cruel, nice-awful, sweet-sour, and valuable-worthless.

Reference: Winter, W. Values and achievement in a freshmen psychology course. Journal of Educational Research, 1961, 54, 183-186.

CHEATING OR DECEPTION

Definition

Cheating is operationally defined in terms of an individual willfully breaking the rules of a sub-group.

RECOMMENDED MEASURE

Cheating Tendencies Test

Description: This test requires children to engage in activities involving situations relating to athletic contests, coordination tests, copying tests, duplicating technique, achievement tests, party games, home situations, peeping tests, puzzle performance tests, speed tests, and classroom cheating tests.

Reference: Hartshorne, H., & May, M. A. Studies in deceit. New York: Macmillan, 1928.

CONFORMITY

Definition

Compliance or agreement with the behavior or attitudes of a group. The norms or standards of the group may be conformed to in whole or in part, and the conformity behavior may be general or specific. Conformity tendency refers to a hypothetical trait or tendency on the part of an individual to accede to social pressure.

RECOMMENDED MEASURE

Rating Scale of Compliance with Commands and Suggestibility

Description: Two observers rate the frequency and alacrity with which children accede to the demands and suggestions of peer group and adults. Daily time-controlled samples were used in the reference study.

Measure Evaluation: In a study of 59 children, age three to eight, interrater reliability coefficients were .69 for peer compliance and .85 for adult compliance in six-to eight-year-olds and .62 and .51, respectively, for three-to five-year olds.

Reference: Crandall, V. J., Orleans, S., Preston, A., & Rabson, A. The development of social compliance in young children. Child Development, 1958, 29, 429-444.

OTHER MEASURES

1. Auditory Conformity Situation

Description: In small group and individual situations, subjects count metronome clicks and report the total to the experimenter. Conformity was measured by the difference between number of errors in reporting individual and group conditions.

Measure Evaluation: Reliability and validity were not reported in the reference study. In 256 subjects, age 7 to 15, the measure differentiated group vs. individual conditions, age, and sex.

Reference: Iscoe, I., Williams, M., & Harvey, J. Modification of children's judgments by a simulated group technique: A normative developmental study. Child Development, 1963, 34, 963-978.

2. California Psychological Inventory Scale Ac

Description: The achievement by conformance scale (Ac) of the California Psychological Inventory (CPI) has been used to compare achievers and underachievers in junior and senior high school. The scale differentiated these groups in the reference study of 60 students at a significance level of $p<.01$.

Reference: Gill, L. J., & Spilka, B. Some nonintellectual correlates of academic achievement among Mexican-American secondary school students. Journal of Educational Psychology, 1962, 53, 144-149.

CONSTRICTED VS FLEXIBLE CONTROL

Definition

Flexible control is the ability to respond to a stimulus by blocking responses to conflicting or interfering aspects of the situation. Persons with constricted control are distracted by or unable to withhold attention from intrusive stimuli.

RECOMMENDED MEASURES

1. Stroop Color-Word Test

Description: Subjects are successively shown three cards. Card I contains 100 color words printed in black. Card II contains rows of colored asterisks, and the subject tells the colors. Card III contains words of colors printed in conflicting colors, (e.g., "blue" printed in red ink); the subject reads the word, ignoring the color.

Reference: Gardner, R. W., Holzman, P. S., Klein, G. S., Linton, H., & Spence, D. P. Cognitive control: A study of individual consistencies in cognitive behavior. Psychological Issues, 1, Monograph 4.

2. Fruit Distraction Test

Description: Children are given a card with four different fruits in different colors and a card with

the fruit plus extraneous drawings. The child tells the experimenter the colors and later is asked to recall the drawings. Measures are taken of reading ("distraction") time and items recalled.

Measure Evaluation: In groups of 12-32 male and female children 9 to 11 years of age who were brain damaged, orphaned or normal (public school), the reading time but not errors or recall differentiated the three groups ($p < .05$).

Reference: Santostephano, S. Cognitive controls and exceptional states in children. Journal of Clinical Psychology, 1964, 20, 213-218.

3. Square Illusion

Description: Subjects estimated the distance between two small squares and adjusted the distance between two large squares as close as possible to that between the small squares.

Measure Evaluation: Odd-even reliability was .90.

Reference: Gardner, R. W. Cognitive controls of attention development as determinants of visual illusions. Journal of Abnormal and Social Psychology, 1961, 62, 120-127.

CURIOSITY

Definition

The tendency or desire to investigate, to seek to observe novel events, to obtain information, to explore the environment. Persistance in examining and exploring stimuli. Reacting positively to new, strange, or incongruous elements in the environment by moving toward them or by exploring or manipulating them.

RECOMMENDED MEASURES

1. Teacher Appraisal of Curiosity

Description: Teachers ranked their students in curiosity by identifying most and least curious and continuing from each end of the scale alternately to the middle.

Measure Evaluation: In five classes of fifth grade children, 153 students, correlations between teacher and peer judgment ranged from .25 to .42.

Reference: Maw, W. H. & Maw, E. W. Establishing criterion groups for evaluating measures of curiosity. Journal of Experimental Education, 1961, 29, 299-305.

2. About Myself Questionnaire

Description: Forty-one statements about habits and attitudes were rated by children for how much they applied to themselves on a four-step scale from "never" to "always."

Measure Evaluation: The self-ratings of 15 fifth grade children judged high in curiosity by teachers and peers and 20 judged low in curiosity differed significantly ($p < .005$).

Reference: Maw, W. H., & Maw, E. W. Establishing criterion groups for evaluating measures of curiosity. Journal of Experimental Education, 1961, 29, 299-305.

3. Children's Reactive Curiosity and Lie Scale

Description: The scale consists of 90 true-false "curiosity" items, e.g., "I like to watch the news on TV," and 10 control "lie" items.

Measure Evaluation: Test-retest reliability (two-week interval) for 433 fourth, fifth, and sixth grade children was .65 to .78. Forty items discriminated ($p < .01$) between the top 27% and the bottom 27%. For grade six children's scores on the curiosity scale were correlated .32 with originality as measured by Guilford's Unusual Uses Test.

Reference: Penney, R. K., & McCann, B. The children's reactive curiosity scale. Psychological Reports, 1964, 15, 323-334.

OTHER MEASURES

1. Who Should Play the Part Questionnaire

Description: For each of eight role descriptions, children selected classmates most like the described characters.

Measure Evaluation: In five classes of fifth-grade children, 153 students, correlations between children's choices and teacher ratings ranged from .25 to .42.

Reference: Maw, W. H., & Maw, E. W. Establishing criterion groups for evaluating measures of curiosity. Journal of Experimental Education, 1961, 29, 299-305.

2. What Would You Do Test

Description: Three paper-and-pencil tests of 50, 56, and 26 items consist of multiple choice questions about what a child would do, want to do, or like to become in various situations.

Measure Evaluation: Kuder-Richardson reliabilities were .65 for the 50-item test given to 35 fifth grade children and .69 for the 26-item test given to

96 fifth grade children. Test-retest reliability was .77 for the 50-item test given to 442 fifth grade children.

Reference: Maw, W. H., & Maw, E. W. Differences in preference for investigatory activities by school children who differ in curiosity level. Psychology in the Schools, 1965, 2, 263-266.

DELAY OF GRATIFICATION

Definition

An aspect of "ego control." Postponing pleasure reward or satisfaction; operationally defined as choosing a larger future reward over a smaller immediate reward.

RECOMMENDED MEASURE

17-Item Choice Test of Delay of Gratification

Description: Children chose smaller immediate rewards or larger delayed (one week) rewards. Subjects were told they would actually get one of the things they chose.

Reference: Mischel, W., & Gilligan, C. Delay of gratification, motivation for the prohibited gratification, and responses to temptation. Journal of Abnormal and Social Psychology, 1964, 69, 411-417.

OTHER MEASURES

1. Delay of Gratification Test (Physical Choice)

Description: Children chose a 1¢ candy immediately or a 10¢ candy in one week.

Measure Evaluation: For a sample of 15 children ages seven to nine, all chose the larger candy when there was no delay; and half chose the larger with the delay period imposed.

Reference: Mischel, W. Preference for delayed reinforcement: An experimental study of a cultural observation. Journal of Abnormal and Social Psychology, 1958, 56, 57-61.

2. Two-Question Delay of Gratification Test

Description: Two questions about choice of a smaller immediate reward (money or a "gift") or a larger future reward were asked of 12-14 year old boys.

Measure Evaluation: In a comparison between the two questions and actual choice (small immediate candy-large delayed candy) using 70 delinquent 12-14 year old boys, the answers to the questions were related to actual choice at the $p<.01$ level using a X^2 test.

Reference: Mischel, W. Preference for delayed reinforcement and social responsibility. Journal of Abnormal and Social Psychology, 1961, 62, 1-7.

DOGMATISM

Definition

A relatively closed cognitive organization of beliefs and disbeliefs; the inability to readily incorporate new information into existing structures. Describes individuals who seek to impose their views by authority; also describes teaching that asks pupils to accept ideas without critical study of the evidence.

RECOMMENDED MEASURES

1. Rokeach Dogmatism Scale

Description: A 66-item scale categorized into the dimensions of belief-disbelief, central-peripheral, and time perspective. The subject states the degree of his agreement with the statements on a six-point scale.

Measure Evaluation: Split-half reliability for the 66-item scale was .91 in a sample of 137 college students. Other samples tested on various forms of the 66-item scale yielded reliabilities ranging from .68 to .93.

Reference: Rokeach, M. The open and closed mind. New York: Basic Books, 1960.

2. Rokeach Opinionation Scale

Description: The scale is composed of 40 belief statements in four categories of opinionation: rejection of left, rejection of right, acceptance of left, acceptance of right. Subjects rated their agreement on a six-point scale. From this basic scale, several additional scales were derived.

Measure Evaluation: Split-half reliabilities for groups of 80 to 207 college students ranged from .50 to .93. Left and right opinionation scores, obtained from the same college subjects, were correlated .00 to -.65.

Reference: Rokeach, M. The open and closed mind. New York: Basic Books, 1960.

3. Gough-Sanford Rigidity Scale (CPI Fx Scale)

Description: This 20-item scale is part of Gough's California Psychological Inventory. The subject answers yes-no questions relating to desire for definiteness and order.

Measure Evaluation: In the reference study, the scale was used to define subject groups.

Reference: Rokeach, M., McGouney, W. C., & Denny, M. R. A distinction between dogmatic and rigid thinking. Journal of Abnormal and Social Psychology, 1955, 51, 87-93.

OTHER MEASURES

1. Lunchins' Water Jar Test

Description: The subjects are given a series of 11 problems in which three hypothetical water jars must be used to produce a given quantity of water. Problems can be solved either rigidly or flexibly and are timed.

Reference: Cowen, E. L. The influence of varying degrees of psychological stress on problem-solving rigidity. Journal of Abnormal and Social Psychology, 1952, 47, 512-519.

2. California F Scale

Description: The scale consists of 78 true-false items designed to reveal authoritarianism. The content includes conventionalism, superstition, destructiveness, etc.

Measure Evaluation: Based on samples of college students and professional persons, split-half reliabilities ranged from .56 to .88.

Reference: Adorno, T. W., Frenkel-Brunswik, E., Levinson, D. J., & Sanford, R. N. The authoritarian personality. New York: Wiley, 1964.

DOMINANCE-SUBMISSION

Definition

A bipolar continuum descriptive of the tendency to lead or to be led, to control or to be controlled. The dominant person seeks to confine, direct, or limit the behavior of others. The submissive person seeks or allows his behavior to be controlled or confined by others.

RECOMMENDED MEASURES

1. Dominance-Submission Derived from MMPI

Description: The scale consists of 41 items from the MMPI. Subjects check the items true or false about themselves.

Measure Evaluation: Test-retest (one week) reliability was .99. Kuder-Richardson reliability was .87. Some agreement was found between scores and judges' ratings.

Reference: Gold, S., DeLeon, P., & Swenson, C. Behavioral validation of a dominance-submission scale. Psychological Reports, 1966, 19, 735-739.

2. Incomplete Sentences Form

Description: Subjects complete sentences from 16 one-or two-word stems. Responses are scored on a five-point scale for ascendance-submission.

Measure Evaluation: Interscorer reliability was .84 for a group of 40 college students.

Reference: Budd, W. C., & Blakeley, L. S. The relationship between ascendancy and response choice on the Minnesota Teacher Attitude Inventory. Journal of Educational Research, 1958, 52, 73-74.

OTHER MEASURES

1. Leary Interpersonal Checklist (ICL)

Description: The test consists of 128 adjectives which the subject checks as either descriptive or not descriptive of himself. The adjectives are grouped into eight categories, including docile-dependent and cooperative-conventional.

Measure Evaluation: Test-retest (two-week) reliability ranged from .73 to .83 for a sample of 77 obese persons.

Reference: Leary, T. Interpersonal diagnosis of personality. New York: Ronald Press, 1957.

2. Social Personality Inventory

Description: The test consists of 52 questions of self-description of personality traits and preferences which are answered on a five-point scale.

Measure Evaluation: For groups of 100 college women, test-retest (two weeks) reliability was .90 and split-half was .88. For a group of 122 college women, test scores correlated with dominance-feeling interview ratings .90.

Reference: Maslow, A. H. A test for dominance-feeling (self-esteem) in college women. Journal of Social Psychology, 1940, 12, 255-270.

EMPATHY

Definition

Understanding of the behavior of another on the basis of one's own experience and behavior. The perception by one person of the emotional state of another. Transposing oneself into the feeling and acting of another.

RECOMMENDED MEASURES

1. Dymond's Empathy Scale

Description: Subjects rate themselves, another person, the other person as he would rate himself, and himself as others would rate him. Ratings are on a six-point scale on six dimensions (e.g., leadership, superiority, etc.).

Measure Evaluation: Test-retest (six weeks) reliability ranged from .62 to .82 for the six dimensions on self-ratings. Observers' ratings of empathy correlated .61 with high empathizers and .14 with low empathizers.

Reference: Dymond, R. F. A scale for the measurement of empathic ability. Journal of Consulting Psychology, 1949, 13, 127-133.

2. Bender's Empathy Measure

Description: The measure contains 42 items concerning feelings and attitudes in various situations. Subjects rate the extent to which the statement applies to them on a four-point scale.

Reference: Bender, I. E., & Hastory, A. H. On measuring generalized empathic ability (social sensitivity). Journal of Abnormal and Social Psychology, 1953, 48, 503-506.

OTHER MEASURES

1. Ranking Measure of Empathy

Description: Subjects ranked statements of value and fault as they described themselves.

Reference: Smouse, A. D., Aderman, M., & Van Buskirk, C. Three empathy measures as correlates of test and rating criteria. Psychological Reports, 1963, 12, 803-809.

2. Incomplete Sentences Test for Empathy

Description: Subjects responded to 16 vacation-oriented stems. Ratings of empathy-related responses were made by two independent raters on a four-point scale.

Measure Evaluation: Interrater reliability was .82 for a sample of 229 nursing students. Correlation was .22 with the Diplomacy Test of Empathic Ability.

Reference: Smouse, A. D., Aderman, M., & Van Buskirk, C. Three empathy measures as correlates of test and rating criteria. Psychological Reports, 1963, 12, 803-809.

EXPECTATION OF SUCCESS

Definition

The extent to which the person believes or predicts that he will attain a goal, complete a task, etc. The stated expectation of success or failure in a particular experimental situation.

RECOMMENDED MEASURES

1. Children's Achievement Wishes Test

Description: Children are shown pairs of cards representing various areas of achievement and asked which he would rather do well. A total of 18 forced choices are given.

Measure Evaluation: In a sample of 40 elementary school children, scores for intellectual attainment wishes correlated .41 with I. Q.

Reference: Crandall, V. J., Katkovsky, W., & Preston, A. Motivational and ability determinants of young children's intellectual achievement behaviors. Child Development, 1962, 33, 643-661.

2. Test of Expectation of Success

Description: The child is presented with eight tasks of graduated difficulty and asked to specify which ones he thought he would perform successfully. Tasks were immediate memory tasks, Porteus mazes, etc.

Measure Evaluation: For a group of 40 elementary school boys and girls, correlations with intelligence test performance were -.41 for girls and .62 for boys.

Reference: Crandall, V. M., Katkovsky, W., & Preston, A. Motivational and ability determinants of young children's intellectual achievement behaviors. Child Development, 1962, 33, 643-661.

FIELD ARTICULATION
(Field Independence-Field Dependence)

Definition

Field articulation consists of degree of perceptual separation of objects from the surrounding field, differentiation of field cues from sensory cues, perceptual reconstruction of a stimulus field, and the degree of acceptance of the prevailing field.

RECOMMENDED MEASURES

1. Children's Embedded Figures Test

Description: The test consists of 20 items. The subject is shown several simple figures, e.g., a square, a house, a kite, and is instructed to try to pick them out of meaningful complex stimuli. The test is suitable for children between the ages of 5 and 12.

Measure Evaluation: Scores on the Children's Embedded Figures Test correlated significantly with the Rod and Frame Test for adults and the Embedded Figures Test for adults. Correlations for children between the ages of 6 and 9 ranged from .82 to .74.

Reference: Corah, N. L. Differentiation in children and parents. Journal of Personality, 1965, 33, 300-308.

2. Rod and Frame Test

Description: The apparatus for this test consists of a square frame on which a rod is mounted. Both the frame and the rod are pivoted at the centers but mounted on separate shafts so that they may be tilted from side to side independently of each other. A wooden chair is placed seven feet in front of the rod-and-frame apparatus. This chair may be placed in any of three positions: upright, tilted 28° left, or tilted 28° right. The subject, while sitting, is presented with the luminous rod and frame in tilted positions and is required to adjust the rod to the true upright while the frame remains tilted.

Reference: Gardner, R. W., Holzman, P. S., Klein, G. S., Linton, H. B., & Spence, D. P. Cognitive control: A study of individual differences in cognitive behavior. Psychological Issues, 1959, 1, No. 4.

IMITATION

Definition

Behavior which copies the behavior of another, with or without intent to copy. The attempt to reproduce the actions of another person either consciously or unconsciously. Behavior patterned after a model or example of another person.

RECOMMENDED MEASURE

Modeling Frequency Count

Description: In a variety of sham-game or task contexts, a model will display certain gestures or behaviors. Observers can record the amount of imitative behavior.

Reference: Bandura, A. Social learning through imitation. In M. R. Jones (Ed.), Nebraska Symposium on Motivation. Lincoln: University of Nebraska Press, 1962, Pp. 211-269.

IMPULSIVITY VS REFLECTION

Definition

Impulsivity is the tendency to make an immediate, unthinking selection of a solution to problems, often those with a high response uncertainty. Reflection is the tendency to weigh alternative solutions. Analytic versus global attitudes are a subcategory of impulsivity versus reflection. An analytic attitude is the tendency to analyze and structure the parts of an entity rather than deal with the entity itself. A global attitude refers to the tendency to ignore the differential components.

RECOMMENDED MEASURES

1. Conceptual Style Test

Description: The equipment for this test consists of three different black and white drawings of familiar objects on a set of 30 cards. The cards are presented and the child is asked to choose two that are alike.

Reference: Kagan, J., Rosman, B. L., Day, D., Albert, J., & Phillips, W. Information processing in the child: Significance of analytic and reflective attitudes. Psychological Monographs, 1964, 78, Whole No. 578.

2. Design Recall Test

Description: Children are shown simple figures for five seconds and told to remember them. They are then asked to pick the one they were shown from an array of similar figures.

Reference: Kagan, J., Rosman, B. L., Day, D., Albert, J., & Phillips, W. Information processing in the child: Significance of analytic and reflective attitudes. Psychological Monographs, 1964, 78, Whole No. 578.

3. Concept Acquisition Test

Description: Children were shown a series of cards containing various categories such as figures with a missing leg, clothing, etc. For each category the child has to learn a nonsense syllable.

Measure Evaluation: For a group of 30 third grade boys, responses correlated with the analytic measure of the Conceptual Style Test ranging from .59 to .75.

Reference: Lee, L. C., Kagan, J., & Rabson, A. Influence of a preference for analytic categorization upon concept acquisition. Child Development, 1963, 34, 433-442.

4. Story Recall Test

Description: Children were read a story containing incongruous elements and specific details. The child was then asked to repeat the story and the number of critical elements recalled was scored.

Reference: Kagan, J., Rosman, B. L., Day, D., Albert, J., & Phillips, W. Information processing in the child: Significance of analytic and reflective attitudes. Psychological Monographs, 1964, 78, Whole No., 578.

5. Picture Discrimination Test

Description: Children were shown 15 pairs of pictures and asked to determine the difference between them.

Reference: Kagan, J., Rosman, B. L., Day, D., Albert, J., & Phillips, W. Information processing in the child: Significance of analytic and reflective attitudes. Psychological Monographs, 1964, 78, Whole No., 578.

6. Haptic Visual Matching

Description: Children felt wooden forms and then chose the correct form visually from a chart. Twenty geometric and familiar forms were used.

Measure Evaluation: For four groups of 30 elementary school children, scores correlated .44 with the Design Recall Test.

Reference: Kagan, J., Rosman, B. L., Day, D., Albert, J., & Phillips, W. Information processing in the child: Significance of analytic and reflective attidues. Psychological Monographs, 1964, 78, Whole No., 578.

INDEPENDENCE - DEPENDENCE

Definition

Independence: An attitude of self-reliance or of resistance to control by others. The independent person seeks nurturance from others relatively infrequently, manifests initiative and achievement strivings, resists, distractions, is self-assertive in determining play activities, and resists interference.

Dependence: A lack of self-reliance; the tendency to seek the help of others in making decisions and other activities. The extent to which an individual uses or relies on other persons as sources of approval, support, help and reference.

RECOMMENDED MEASURES

1. Beller Autonomous Achievement Striving Rating Scale

Description: Children are rated on a seven-point scale for various dependency related factors such as how often they seek help, how much satisfaction they derive from their own work, etc.

Measure Evaluation: For ratings of groups of 11-13 four and five year old children, interrater reliabilities ranged from .66 to .97. The correlation between measures of independence and dependence was -.53.

Reference: Beller, E. K. Dependency and independence in young children. Journal of Genetic Psychology, 1955, 87, 25-35.

2. Dependency Rating Scale

Description: Teachers rated children on five dependency scales: instrumental dependency, seeking reassurance, seeking physical proximity, negative attention-getting behavior, positive attention-getting behavior.

Measure Evaluation: For a sample of 101 nursery school children, interrater reliabilities ranged from .68 to .83. High and low dependency children, as defined by the ratings, differed significantly in separate observations concerning walking home alone and asking for help in dressing.

Reference: Ross, D. Relationship between dependency, intentional learning, and incidental learning in preschool children. Journal of Personality and Social Psychology, 1966, 4, 374-381.

3. Observation Frequency Count

Description: Children were told they could paint as long as they wished and were rated by observers on 10 variables such as help-seeking, attention-seeking and time spent painting.

Measure Evaluation: For a group of 56 girls and boys aged four to five, observer agreement was 73%. Inter-variable correlations ranged from -.01 to .77 (omitting age).

Reference: Gewirtz, J. L. A factor analysis of some attention-seeking behaviors of young children. Child Development, 1956, 27, 17-36.

OTHER MEASURES

1. Adult Assessment Rating Scale of Dependency

Description: Adults were rated by an interviewer on six dependency and passivity scales after a five-hour interview.

Measure Evaluation: Independent ratings of a random sample of taped interviews gave interrater reliabilities ranging from .63 to .82.

Reference: Kagan, J., & Moss, H. A. The stability of passive and dependent behavior from childhood through adulthood. Child Development, 1960, 31, 577-591.

2. Leary Interpersonal Checklist--Octant VI

Description: Subjects indicate which of 128 items is descriptive of themselves.

Measure Evaluation: Average test-retest reliability of .78 was obtained for a sample of 77 overweight women.

Reference: Leary, T. Interpersonal diagnosis of personality. New York: Ronald Press, 1957.

3. Keshner's Test for Dependency and Independence

Description: Children are shown cartoon drawings which show adults giving help to children. The children indicate whether they would or would not accept help.

Measure Evaluation: In the reference study, the test was used to determine experimental groups. These groups differed significantly in suggestibility.

Reference: Jakubczak, L. F., & Walter, R. H. Suggestibility as dependency behavior. Journal of Abnormal and Social Psychology, 1959, 59, 102-107.

INTERNAL VS EXTERNAL CONTROL OF REINFORCEMENT

(Locus of Control)

Definition

The degree to which an individual perceives that reinforcement follows from or is contingent upon his own behavior or attitudes versus the degree to which he feels that rewards and punishments are controlled by forces outside his own actions. Internal control is manifest if one perceives that events depend upon his own behavior or relatively permanent characteristics. External control is manifest if reinforcement is perceived by the person as following some action of his own but not being entirely contingent upon his actions. External locus of control implies perceiving reinforcement as the result of luck, chance or fate.

RECOMMENDED MEASURES

1. Internality-Externality Scale (I-E Scale)

Description: The scale consists of 23 items each consisting of a forced choice between an external and internal belief, e.g., "People are lonely because they don't try to be friendly" (internal) or "There's not much use in trying too hard to please people, if they like you, they like you" (external). Also included are six "filler" items intended to obscure the purpose of the test.

Measure Evaluation: For samples of college students and prisoners, test-retest (one month) reliabilities ranged from .60 to .83.

Reference: Rotter, J. B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80, Whole No. 609.

2. Children's Intellectual Achievement Responsibility Questionnaire

Description: The child is presented with 36 relevant situations, half negative and half positive. The child indicates whether, if the situation were to occur, it would be the result of his own efforts or the result of the actions of others.

Measure Evaluation: Reliabilities not reported. In the reference study of 20 boys and 20 girls, boys scores (but not girls) correlated with time spent in free-play, intelligence, and achievement test scores.

Reference: Crandall, V. J., Katkovsky, W., & Preston, A. Motivational and ability determinants of young children's intellectual achievement behaviors. Child Development, 1962, 33, 643-661.

OTHER MEASURES

1. Bialer's Verbally Administered Locus of Control Scale

Description: The scale consists of 23 questions to which the subject answers yes or no.

Reference: Bialer, I. Conceptualization of success and failure in mentally retarded and normal children. Journal of Personality, 1961, 29, 303-320.

2. Battle's Children's Picture Test of External-Internal Control

Description: On a six-item cartoon test, a child states what he would say in a real situation that involved responsibility.

Measure Evaluation: For a sample of 40 protocols, interrater reliability was .93.

Reference: Battle, E., & Rotter, J. B. Children's feelings of personal control as related to social dress and ethnic group. Journal of Personality, 1963, 31, 482-490.

INTOLERANCE OF AMBIGUITY

Definition

Unwillingness or inability to accept ambivalence or ambiguity. Inability to tolerate situations capable of alternate or incompatible interpretations.

RECOMMENDED MEASURES

1. Organize the Picture Test

Description: The subject is sucessively shown a series of cards, each of which contains more elements of a final design. Preceeding each of the five series of 15 cards the subject is given five possible answers.

Reference: Smock, C. D. The influence of psychological stress on the "intolerance of ambiguity." Journal of Abnormal and Social Psychology, 1955, 50, 177-182.

2. Walk "A" Scale

Description: Subjects rate their agreement with eight statements relating to ambiguity. Ratings are on a seven-point scale.

Reference: O'Connor, P. Ethnocentrism, "intolerance of ambiguity," and abstract reasoning ability. Journal of Abnormal and Social Psychology, 1952, 47, 526-530.

3. The Tolerance of Ambiguity Scale

Description: Subjects answer 16 yes-no items which reflect attitudes toward such things as social situations, chance events, and problem-solving situations.

Measure Evaluation: Test-retest (1 month) reliability was .71 for a group of 41 college students. Two-month reliability was .57 for a group of 105 students.

Reference: Rydell, S. T., & Rosen, E. Measurement and some correlates of need-cognition. Psychological Reports, 1966, 19, 139-165.

4. Scale of Tolerance of Ambiguity

Description: The 16 item scale was designed to refer to three types of ambiguity (novelty, complexity, and insolubility). Subjects rated their agreement or disagreement on a six-point scale.

Measure Evaluation: Internal consistency ranged from .39 to .62 for college age groups. Test-retest (2 weeks to 2 months) reliability was .85 for a group of 15 college students. Correlations with the Coulter Scale and the Walk Scale were .36 and .54, respectively.

Reference: Budner, S. Intolerance of ambiguity as a personality variable. Journal of Personality, 1962, 30, 29-50.

INTROVERSION - EXTROVERSION

Definition

A hypothesized dimension for the description and measurement of personality. Three aspects are commonly distinguished: direction of interest and attention outward or inward, ease or difficulty of social adjustment and tendency to open or secretive behavior. The dimension is probably not unitary but represents a collection of loosely related variables.

RECOMMENDED MEASURE

Eysenck Personality Inventory

Description: Subjects respond "yes" or "no" to questionnaire items such as "Are you rather lively?"

Reference: McLaughlin, R. J., & Eysenck, H. J. Extroversion, neuroticism and paired-associate learning. Journal of Experimental Research in Personality, 1967, 2, 128-132.

LEVELING VS SHARPENING

Definition

Leveling is the tendency to perceive or to recall something as having greater symmetry, less irregularity, less incongruity than it objectively has. Operationally leveling includes differentiation of the stimulus field by reduction of figure ground distinction or assimilation of new stimuli to a dominant organization. Sharpening is the tendency to accentuate differences in perceived objects--a memory distortion that over-emphasizes distinguishing characteristics so that events recalled are better defined and more distinct than the originals. Sharpeners are characterized by a high level of articulation in a sequence of stimuli.

RECOMMENDED MEASURES

1. Children's Leveling-Sharpening Test

Description: The subject views 27 displays of the stimulus--a child's wagon. After every third frame an element is omitted. Leveling is operationally defined in terms of not correctly reporting changes.

Measure Evaluation: The difference between age groups is significant at the .01 level, with younger children displaying more leveling than older children.

Reference: Santostefano, S. Cognitive controls and exceptional states in children. Journal of Clinical Psychology, 1964, 20, 213-218.

2. Schematizing Test

Description: The subject is shown a series of 150 squares of light ranging in size from 1.2 to 13.7 inches. The five smallest squares are presented first in three different orders. Then the smallest one is dropped and the next largest is added to the series. The subject is to report the size of the squares. There is a total of 10 series of 15 judgments each.

Reference: Holzman, P. S., & Gardner, R. W. Leveling-sharpening and memory organization. Journal of Abnormal and Social Psychology, 1960, 61, 176-180.

MASCULINITY-FEMININITY

Definition

A dimension ranging from what is male to what is female. A description in terms of masculine-feminine may be used for physical characteristics, interest patterns, attitudes, occupational preferences, etc.

RECOMMENDED MEASURES

1. Toy Preference Test

Description: Toys were presented to college students for rating on a 9-point scale of masculinity-femininity. From the ratings, toys were paired (24 pairs) and pictures of them given to children with a picture of a boy or girl. The child stated which toy the pictured child would prefer.

Measure Evaluation: For groups of 10 to 45 five-to ten-year-old children, sex appropriate responses increased from 13.5 to 19.2 with age for boys and 13.0 to 16.3 for girls.

Test-Retest (1-4 week) reliability for kindergarten, second and third graders ranged from .13 to .37 when re-testing was by a same-sexed experimenter as the first test but ranged from .67 to .72 when test and retest were given by opposite-sexed experimenters.

Reference: DeLucia, L. A. The toy preference test: A measure of sex-role identification. Child Development, 1963, 34, 107-117.

2. It Scale for Children (ITSC)

Description: The scale consists of 36 pictures, socially defined and identified with masculine and feminine roles in our culture. The four sections are: toy pictures, paired pictures, child figures, and parental roles.

Measure Evaluation: For samples of 303 boys and 310 girls, ages 5 to 11, both sexes showed increasing preference for same sex items with age. Girls showed greater variability.

Reference: Brown, D. G. Masculinity-femininity development in children. Journal of Consulting Psychology, 1957, 21, 197-202.

OTHER MEASURES

1. Rosenberg and Sutton-Smith's Games List

Description: Children indicate like or dislike for each of 180 common children's games. The games are keyed to degree of masculine or feminine liking.

Measure Evaluation: For a sample of 363 boys and 391 girls, correlation between sex and masculinity-femininity scores ranged from .66 to .73.

Reference: Walker, R. N. Measuring masculinity and femininity by children's games choices. Child Development, 1964, 35, 961-971.

2. Femininity Adjective Checklist

Description: The list contains 148 adjectives which are checked if the subject thinks them descriptive of himself.

Measure Evaluation: Test-retest (1 day) reliability for a group of 95 college men was .81.

Reference: Berdie, R. F. A femininity adjective check list. Journal of Applied Psychology, 1959, 43, 327-333.

3. California Psychological Inventory (Fe Scale)

Description: The scale consists of 38 items of attitudes and personality traits which the subject answers true or false.

Measure Evaluation: The scale differentiates between men and women at $p < .001$.

Reference: Gough, H. G. A cross-cultural analysis of the CPI femininity scale. Journal of Consulting Psychology, 1966, 30, 136-141.

4. Franck Drawing Completion Test

Description: The test consists of 36 simple line patterns which the subject is asked to complete. Norms by which the drawings are scored for masculinity and feminity were developed from drawings of college students.

Measure Evaluation: Interrater reliabilities ranged from .84 to .90 for a group of 150 male and 150 female college students.

Reference: Franck, K., & Rosen, E. A projective test of masculinity-femininity, Journal of Consulting Psychology, 1949, 13, 247-256.

MORAL JUDGMENT

Definition

A general term which covers several related terms:

Immanent Justice--the belief in the existence of automatic punishments which emanate from objects themselves.

Moral Realism--a belief that rightness and wrongness are inherent in certain conducts and are objectively perceptible and self-evident.

Belief in retributive vs restitutive (i.e., merely restoring the equilibrium upset by the punished act) punishment.

Belief in collective (i.e., guilt by association) vs. individual responsibility for actions.

Belief in severe vs. light punishment.

RECOMMENDED MEASURES

1. Moral Judgment Test

Description: Children are read a series of 20 stories which they are asked to complete. The stories depict morality areas such as immanent justice, retribution and responsibility.

Measure Evaluation: For a sample of 807 children in grades 5, 7, 9 and 11, reliability estimates ranged from .55 to .61 (analysis of variance method).

Reference: Johnson, R. C. A study of children's moral judgments. Child Development, 1962, 33, 327-354.

2. Moral Maturity Nomination Inventory

Description: A 10 item sociometric test in which each item involves the nomination of a male and a female. Items tap the moral traits of trustworthiness, knowledge of right and wrong, arousal of guilt after doing wrong, and willingness to take blame for wrong doing.

Reference: Johnson, R. C. A study of children's moral judgments. Child Development, 1962, 33, 327-354.

NEED ACHIEVEMENT

Definition

The desire to compete with a standard of excellence; the capacity to experience pride in accomplishment and positive affect in situations in which success is achieved.

RECOMMENDED MEASURE

Thematic Apperception Test

Description: A projective technique in which stories are told to 4 or 6 pictures and protocols scored according to a prescribed method of content analysis.

Reference: McClelland, D. C., Atkinson, J. W., Clark, R. A., & Lowell, E. The achievement motive. New York: Appleton-Century-Crofts, 1953.

OTHER MEASURES

1. French Test of Insight

Description: A sentence-completion format projective device. Story content scored indentically to the Thematic Apperception Test.

Reference: French, E. Development of a measure of complex motivation. In J. W. Atkinson (Ed.), Motives in fantasy, action, and society. Princeton: Van Nostrand, 1958.

2. Risk-Preference Scale

Description: A 26-item test in which the items are rated according to the direction and intensity of agreement. Items are primarily derived from previous empirical work differentiating high from low achievement-oriented individuals.

Reference: Mehrabian, A. Male and female tendencies of the need to achieve. Educational and Psychological Measurement, 1968, (In Press).

NEED AFFILIATION

Definition

The need to be associated with another person or persons, whether for cooperative effort, companionship, love, or sexual satisfaction; a need which can be satisfied only in interpersonal relations.

RECOMMENDED MEASURE

Firo B Scale (Fundamental Interpersonal Relations Orientation--Behavior)

Description: This scale is made up of six subscales relating to affilation with nine items in each scale. The subject states to what extent each item is an accurate description of himself.

Measure Evaluation: A coefficient of reproducibility (REP) of .90 was found. Test retest reliability (1 week) of .76 was reported.

Reference: Schutz, W. C. FIRO: A three-dimensional theory of interpersonal behavior. New York: Holt, Rinehart, & Winston, 1958.

OTHER MEASURES

1. Need Affiliation Scale of the Thematic Apperception Test

Description: Selected cards from the TAT are used and scored for affiliation imagery. Stories are scored for affiliation when the protocol contains some evidence of concern in one or more of the characters over establishing, maintaining, or restoring a positive affective relationship with another person.

Reference: Heyns, R. W., Veroff, J., & Atkinson, J. W. A scoring manual for the affiliation motive. In J. W. Atkinson (Ed.), Motives in fantasy, action, and society, Van Nostrand, 1958, Pp. 205-218.

2. Bass Orientation Inventory

Description: An objective scale which measures a person's concern for maintaining happy relationships with others and his preference for joining groups.

Reference: Knapp, D. E., Knapp, D., & Weick, K. Interrelations among measures of affiliation and approval motivation under stress and non-stress conditions. Journal of Social Psychology, 1966, 69, 223-235.

POPULARITY

Definition

The degree to which one is liked by others or is selected as desirable.

RECOMMENDED MEASURES

1. Five-Item Sociometric Questionnaire

Description: Children gave three answers to each of five questions such as "Whom do you most like?" and "Whom do you think the teachers like?"

Reference: Krieger, L., & Schwartz, M. M. The relationship between sociometric measures of popularity among children and their reactions to frustration. Journal of Social Psychology, 1965, 66, 291-296.

2. Rate Sociometric Scale

Description: Children rated each classmate on a five-point scale from "best friend" to "dislike."

Reference: Reese, H. W. Sociometric choices of the same and opposite sex in late childhood. Merrill-Palmer Quarterly, 1962., 8, 173-174.

OTHER MEASURES

1. Sociometric Choice

Description: Students named the three boys and three girls they most liked to be with and the three boys and three girls they least liked to be with.

Reference: Horowitz, H. Interpersonal choice in American adolescents. Psychological Reports, 1966, 19, 371-374.

2. Picture Sociometric Technique

Description: During individual interviews, children were asked to point to photographs of three preferred classmates for outside play, inside play and listening to stories.

Measure Evaluation: For groups of 19 children three to five years of age, sociometric scores correlated from .16 to .71 with teachers' judgments of the closeness of the children.

Reference: McCandless, B. R., & Marshall, H. R. A picture sociometric technique for preschool children and its relation to teacher judgments of friendship. Child Development, 1957, 28, 139-147.

RISK TAKING

Definition

Assessing the probabilities of various outcomes and their utility or benefit and making a decision whether or not to respond. The extent to which one will take a chance in any particular situation. The willingness to risk losing because of possible but uncertain gain.

RECOMMENDED MEASURES

1. Pay-to-Play Gambling Task

Description: Three simulated slot machines with pennies visible in the window were used. The machines were set to pay off at ratios of 1:1, 1:3 and 1:8 with pay off of 1, 3, and 8 pennies respectively. The number of times each machine was played was recorded.

Measure Evaluation: For 52 preschool and elementary children no age differences were found for the various probabilities. During a second play session, 61% of the boys and 38% of the girls did not choose the machine they had played most frequently in the prior session.

Reference: Kass, N. Risk in decision making as a function of age, sex, and probability preference. Child Development, 1964, 35, 577-582.

2. Input Probability Test

Description: Four decks of 20 index cards containing big and little pictures are used. The proportion of big figures varies from .60 to 1.0. Children guess which figure will appear.

Measure Evaluation: For seven children ages three to eight, asymptotes at the correct probability were reached in 60 to 120 guesses.

Reference: Messick, A. J., & Solley, C. M. Probability learning in children: Some exploratory studies. Journal of Genetic Psychology, 1957, 90, 23-32.

3. Decision Making Technique

Description: The subject sees the number of each of two colors of poker chips put into a container and then guesses which one he will choose with his eyes closed. Pay off schedules are varied.

Reference: Goldberg, S. Probability judgements by preschool children: Task conditions and performance. Child Development, 1966, 37, 157-167.

4. Repetition Choice Task

Description: The subject is given two puzzles and is allowed to succeed on one and fail on the other. He is then allowed to work either one.

Measure Evaluation: For 59 children, ages three to nine, boys returned to the previously failed puzzle more often than girls, with most difference attributable to the older boys.

Reference: Crandall, V. J., & Rabson, A. Children's repetition choices in an intellectual achievement situation following success and failure. Journal of Genetic Psychology, 1960, 97, 161-168.

SELF CONCEPT

Definition

A person's view of himself, the way he sees himself at a given time. Self concept includes the aggregate of attitudes, judgments, and values which an individual holds with respect to his behavior, his ability, his body, his worth as a person, i.e., how he perceives and evaluates himself.

RECOMMENDED MEASURES

1. Bill's Index of Adjustment and Values

Description: Forty-nine words (e.g., acceptable, accurate, alert) are arranged in a vertical list followed by three blank columns. Subjects are asked to use each of the words to complete the sentence, "I am a (an) _____person." and to indicate on a five point scale how much of the time this describes them. This rating is placed in column I. In Column II, subjects are asked to record how they feel about themselves as described in the first blank. In Column III Ss are instructed to record for each of the 49 words the completion of the sentence, "I would like to be a (an) _____person," and to rate how much of the time the statement accurately describes them.

Reference: Bills, R. E., Vance, E. L., & McClean, O.S. An index of adjustment and values. Journal of Consulting Psychology, 1951, 15, 157-161.

2. Washburn's Self Concept Test

Description: Consists of three subtests with a total of 347 forced-choice items measuring two negatively correlated self-levels. Sample items: "I want to be considered strong by others," and "One of my best features is that I don't let feelings influence my judgment."

Reference: Washburn, W. C. Factors associated with levels of self-conceptualization in high school students. California Journal of Educational Research, 1961, 12, 200-206.

3. Piers' Self Concept Scale for Children

Description: Consists of 80 forced-choice items which were selected from a pool of children's statements of what they liked and disliked about themselves, e.g., "I am a quiet person," "I am like my father," and "I would rather work alone than with a group."

Measure Evaluation: Kuder-Richardson reliabilities for third to 10th grade children ranging from .83 to .91 were reported.

Reference: Piers, E. V., & Harris, D. B. Age and other correlates of self concept in children. Journal of Educational Psychology, 1964, 55, 91-95.

4. The Self Concept Scale for Children

Description: This scale consists of 22 trait-descriptive adjectives, (e.g., friendly, happy, lazy) each of which is prefaced by the phrase, "I am..." and is followed by a five point rating scale. Nineteen adjectives are considered as positive or socially desirable attributes, while three are considered as descriptive of negative attributes.

Measure Evaluation: Two week test retest reliabilities for fourth, fifth and sixth grade boys and girls ranging from .73 to .91 are reported. In each case approximately 50 girls and 50 boys were included as subjects.

Reference: Lipsitt, L. P. A self concept scale for children and its relationship to the children's form of the Manifest Anxiety Scale. Child Development, 1958, 28, 463-472.

SOCIAL DESIRABILITY

Definition

The extent to which behaviors, attitudes, test items, etc., are considered "favorable" or "good". The extent to which behaviors, etc., are socially approved or accepted.

RECOMMENDED MEASURES

1. Marlowe-Crowne Social Desirability Scale

Description: The 33-item, true-false scale is entitled "Personal Reaction Inventory." Items are descriptions of activities, beliefs or attitudes which are generally true of most people but not desirable--e.g., "I sometimes feel resentful when I don't get my way," and descriptions of desirable but generally untrue behaviors, e.g., "I never resent being asked to return a favor." Subjects answer true or false as to whether the item pertains to them.

Measure Evaluation: For a sample of 31 college students, test-retest (one month) reliability was .89. For a group of 120 college students, the scale was correlated .35 with the Edwards Social Desirability Scale.

Reference: Crowne, D. P., & Marlowe, D. A new scale of social desirability independent of psychopathology. Journal of Consulting Psychology, 1960, 24, 349-354.

2. Children's Social Desirability Questionnaire

Description: The questionnaire consists of 48 true-false items (yes-no responses for fifth grade and below). The questions ask whether the child always has attitudes that are desirable or never has attitudes or does things that are undesirable.

Measure Evaluation: Split-half reliability coefficients were .69 to .90 for groups of children in grades three to 10. For a group of 63 children, test-retest (one month) reliability was .90.

Reference: Crandall, V. C., & Crandall, V. J. A children's social desirability questionnaire. Journal of Consulting Psychology, 1965, 29, 27-36.

OTHER MEASURE

Edwards Social Desirability Scale

Description: The scale consists of 39 items taken from the MMPI. Subjects answer yes or no to whether each statement applies to them.

Measure Evaluation: Split-half reliability was .83 for a group of 192 college students.

Reference: Edwards, A. L. The social desirability variable in personality assessment and research. New York: Dryden Press, 1957.

SUGGESTIBILITY

Definition

The trait or state of being susceptible to suggestion. Being open to acceptance of the commands, ideas, or beliefs of another person.

RECOMMENDED MEASURE

Barber Suggestibility Scale

Description: The scale consists of eight standardized commands: arm lowering, arm levitation, hand lock, thirst hallucination, verbal inhibition, body immobility, post hypnotic-like response, and selective amnesia. The items are scored subjectively and objectively.

Measure Evaluation: In studies with college women and nursing students, test-retest (one week) reliabilities were .82. Odd-even reliabilities under various test conditions were .75 to .88 for groups of 62 male and female college students.

Reference: Barber, T. X. Measuring "hypnotic-like" suggestibility with and without "hypnotic induction;" psychometric properties, norms, and variables influencing response to the Barber suggestibility scale (BSS). Psychological Reports, 1965, 16, 809-844.

OTHER MEASURES

1. Stanford Hypnotic Suggestibility Scale

Description: The scale consists of 12 items which are suggested to the subject after a short hypnosis induction procedure. Criteria for passing each item are given. Items include postural sway, verbal inhibition, and posthypnotic suggestion.

Measure Evaluation: In samples of 60 to 124 college students, test-retest (one day) reliabilities using two forms were .78 to .87.

Reference: Hilgard, E. R., Weitzenhoffer, A. M., Landes, J., & Moore, R. K. Distribution of susceptibility to hypnosis in a student population: A study using the Stanford Hypnotic Susceptibility Scale. Psychological Monographs, 1961, 75, 1-22.

2. Postural Sway Test

Description: Subjects are asked to stand with their eyes closed; a tape recording then tells the subject he is falling forward. Amount of forward and backward sway is measured.

Measure Evaluation: Test-retest reliabilities were .94 (immediate), .74 (24 hours), and .58 (three weeks).

Reference: Rickels, K., Downing, R., & Appel, H. Some personality correlates of suggestibility in normals and neurotics. Psychological Reports, 1964, 14, 715-719.